

## REMARKS

Claims 1, 2, 4, 5, 8, 10, 12-14, 18-22, 31 and 36 are pending. No new matter is added in this Response.

1. Claims 1, 2, 4, 5, 14, 19, 20 and 22

The Office Action rejected claims 1, 2, 4, 5, 14, 19, 20 and 22 under 35 U.S.C. § 103(a) over *Henmi et al.* in view of *Sheu et al.* However, in order to render a claim obvious, the cited references must suggest each and every limitation of the claim. *See* MPEP § 2143. The combination of *Henmi et al.* in view of *Sheu et al.* fails to teach all elements of those claims, and thus the combination fails to render any of the claims obvious.

Claims 1, 2, 4, 5, 14, 19, 20 and 22 are directed to a method that includes “setting the angle between the grinding wheel rotational axis and roll rotational axis less than about 25 degrees.” Each of these claims also requires “maintaining a ratio of axial taper tolerance (TT) to radial wheel wear compensation (WWC) of greater than 10”.

The Office states that *Henmi et al.* discloses a method of grinding a ferrous wheel roll...the method comprises the claimed method steps that include: mounting a grinding wheel on a machine spindle (32) and setting the angle between the grinding wheel rotational axis and roll rotational axis less than about 25 degrees (Fig. 7, and Table 1); and bringing the rotating wheel into contact with a rotating roll surface and traversing the wheel across an axial roll length, while maintaining a ratio of axial taper tolerance to radial wheel wear compensation of greater than 25 (14:47-15:19); bringing the rotating wheel into contact with a rotating roll surface and traversing the wheel across an axial roll length, while maintaining a ratio of axial taper tolerance on wheel wear compensation of greater than 10 (12:47 – 13:17); and prohibiting thermal degradation (8:16-28)

To find a claim obvious, the Patent Office must make “a searching comparison of the claimed invention – including all its limitations – with the teachings of the prior art.” *In re Ochai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis added). **The references do not teach or suggest the claim limitations.**

Applicants claim (claim 1; in part):

“...mounting a grinding wheel on a machine spindle and setting the angle between the grinding wheel rotational axis and roll rotational axis less than about 25 degrees...”

*Henmi et al.* teach a working roll 40 which is rotated about a substantially horizontal axis  
1... Fig. 5 further shows the wheel 10 rotating counterclockwise (see arrow) (Fig. 5, col. 9, lines 46- 64). Figs. 5-7 clearly illustrate the working roll 40 rotational axis is perpendicular to the wheel 10 rotational axis. Further, as shown in Fig. 7, the angle between the wheel 10 rotational axis and working roll 40 rotational axis is between 80-90 degrees.

The Office states that *Henmi et al.* teach “...bringing the rotating wheel into contact with a rotating roll surface and traversing the wheel across an axial roll length, while maintaining a ratio of axial taper tolerance on wheel wear compensation of great than 10 (12:47-13:17)”

Applicants claim (claim 1; in part):

“...bringing the rotating wheel into contact with a rotating roll surface and traversing the wheel across an axial roll length, while maintaining a ratio of axial taper tolerance (TT) to radial wheel wear compensation (WWC) of greater than 10;”

Paragraph 007 of Applicants’ specification states:

“...**taper tolerance** TT corresponds to the allowable size variation in the **roll** from one end of the roll to the other end. WWC is done by continually moving the grinding wheel feed axis into the roll surface as a function of the axial traverse of the wheel.”

*Henmi et al.*, at col. 12, lines 47 through col. 13 line 17, teach “...**grinding wheel** 60 having tapered boundary or bonded surfaces, i.e., complementally tapered outer and inner circumferential surfaces 62, 64...” *Henmi et al.* teach that “the inclination angle of the tapered surfaces 62,64 should not be excessive...” *Henmi et al.* make no mention of a ratio of axial taper tolerance (TT) to radial wheel wear compensation (WWC) as Applicants claim.

The Office further states that *Henmi et al.* does not specifically disclose a surface roughness of less than 5 mircons. The Office states that *Sheu et al.* discloses a roll grinding process (Fig. 5) that achieves a surface roughness of less than 3 micrometers so as to achieve a polished finish. The Office states that it would have been obvious to one having ordinary skill in the art at the time that invention was made to have ground *Henmi’s* roll to a surface finish less than 3 micrometers as taught by *Sheu et al.* so as to achieve a polished finish.

*Sheu et al.* (col. 6, lines 23-28) state:

Fig. 5 is a photomicrograph of the surface of a work roll in a final stand or stands of a cold rolling operation magnified 200 times. The photomicrograph shows micron-sized craters formed by a laser device, the **depth** of the craters, as formed, being on the order of 3.0 microns.

The depth of craters taught in *Sheu et al.* is not surface roughness  $R_a$ . Nowhere do *Sheu et al.* teach or suggest "...a surface roughness  $R_a$  of less than 5 micrometer" as Applicants' claim.

As discussed above, *Henmi et al.* fails to teach or suggest all Applicants' claim limitations as required by MPEP §2143. The combination of *Henmi et al.* in view of *Sheu et al.* fails to teach all elements of those claims, and thus the combination fails to render any of the claims obvious.

Applicants respectfully submit that the 35 U.S.C. §103(a) rejection is improper and Applicants respectfully request withdrawal of the rejections of claims 1, 1, 2, 4, 5, 14, 19, 20 and 22.

2. Claims 8, 10, 12, 13, 18 and 21, 31, and 36

Claims 8, 10, 12, 13, 18 and 21, 31, and 36 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Henmi et al.* in view of *Sheu et al.* and in further view of *Mori et al.* (6,306,007). However, in order to render a claim obvious, the cited references must suggest each and every limitation of the claim. See MPEP § 2143.

As discussed above, *Henmi et al.* and *Sheu et al.* fail to teach or suggest Applicants' claim limitations as required by MPEP § 2143. The combination of *Henmi et al.* in view of *Sheu et al.* and in further view of *Mori et al.* fails to teach all elements of those claims, and thus the combination fails to render any of the claims obvious.

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Applicants respectfully submit that the 35 U.S.C. §103(a) rejection is improper and Applicants respectfully request withdrawal of the rejections of claims 8, 10, 12, 13, 18, 21, 31 and 36.

#### CONCLUSION

Based on the arguments presented above, Applicants request withdrawal of the rejections and allowance of all claims. If the Examiner has any questions or comments or needs any additional information, I invite the Examiner to telephone me at the number listed below.

Respectfully submitted,

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